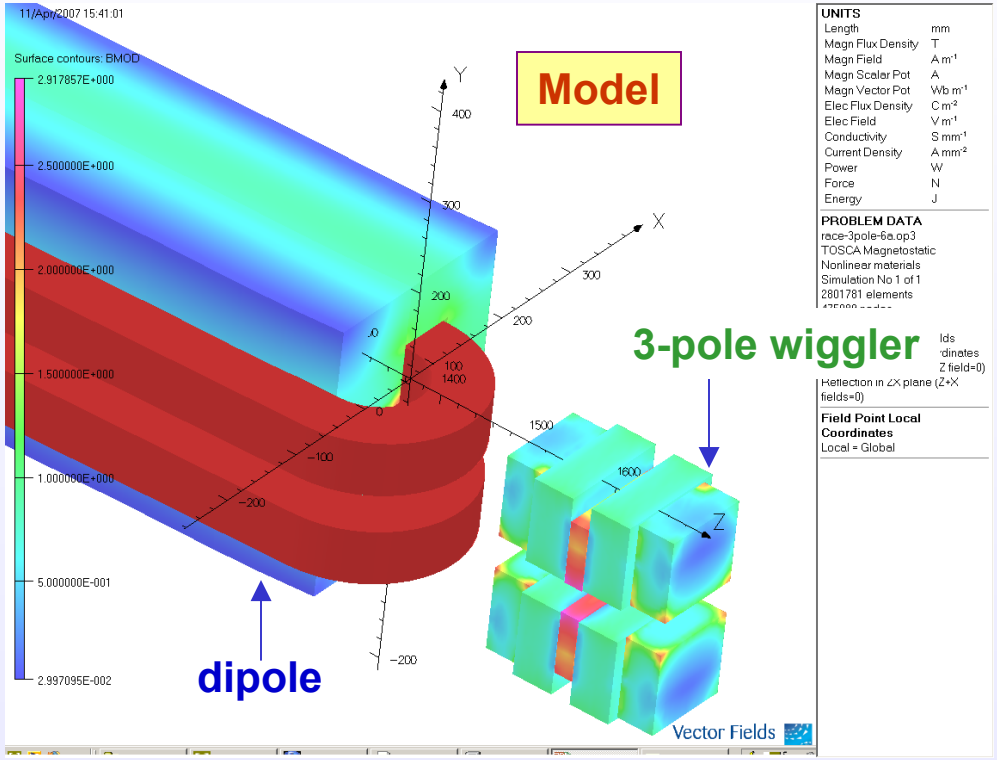
Dipole Magnet End Design Concepts

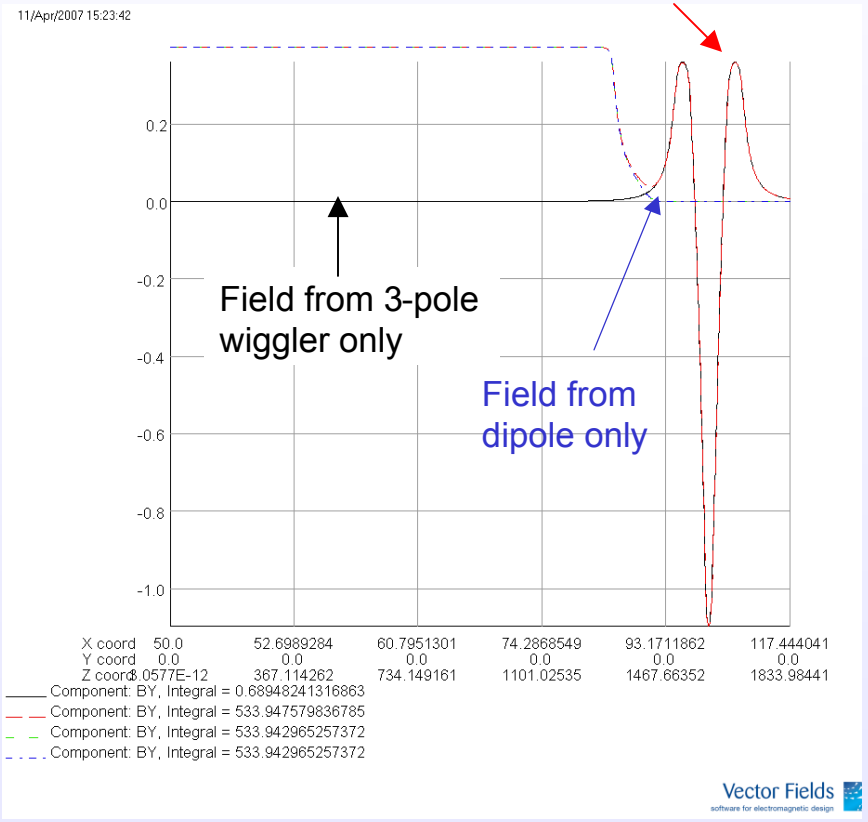
(as related to the vacuum chamber and diagnostics)

Ramesh Gupta

New design with racetrack coils ~20 cm iron to iron gap (~ 9 cm coil to iron gap)



Field when both are included in the model

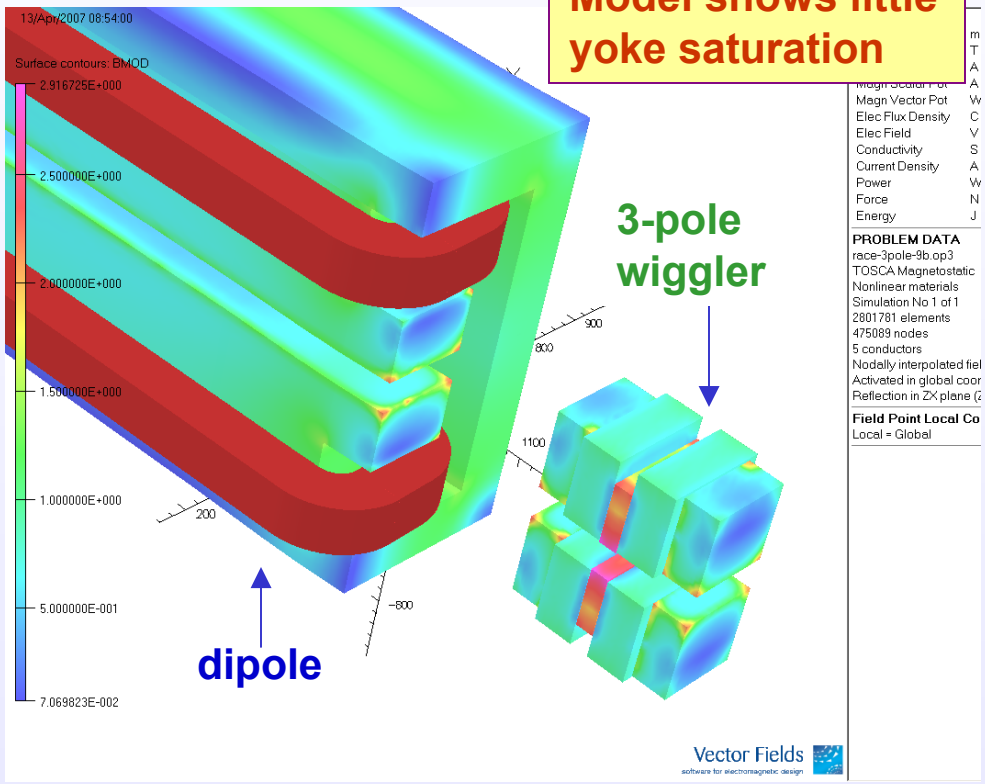


Coil radius in end is 2".

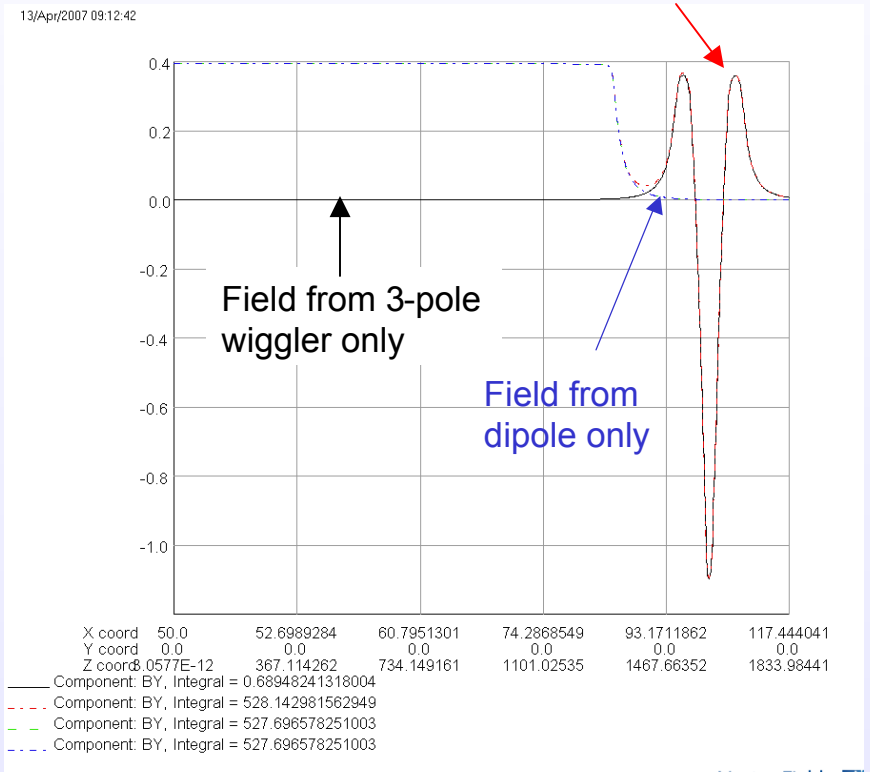
- There is virtually no interference (within computational errors, < few parts in 1,000) between the fields of three pole wiggler and dipole.

Newer design with 1" radius racetrack coils enclosed in yoke (~ 18 cm coil to iron gap)

Model shows little yoke saturation

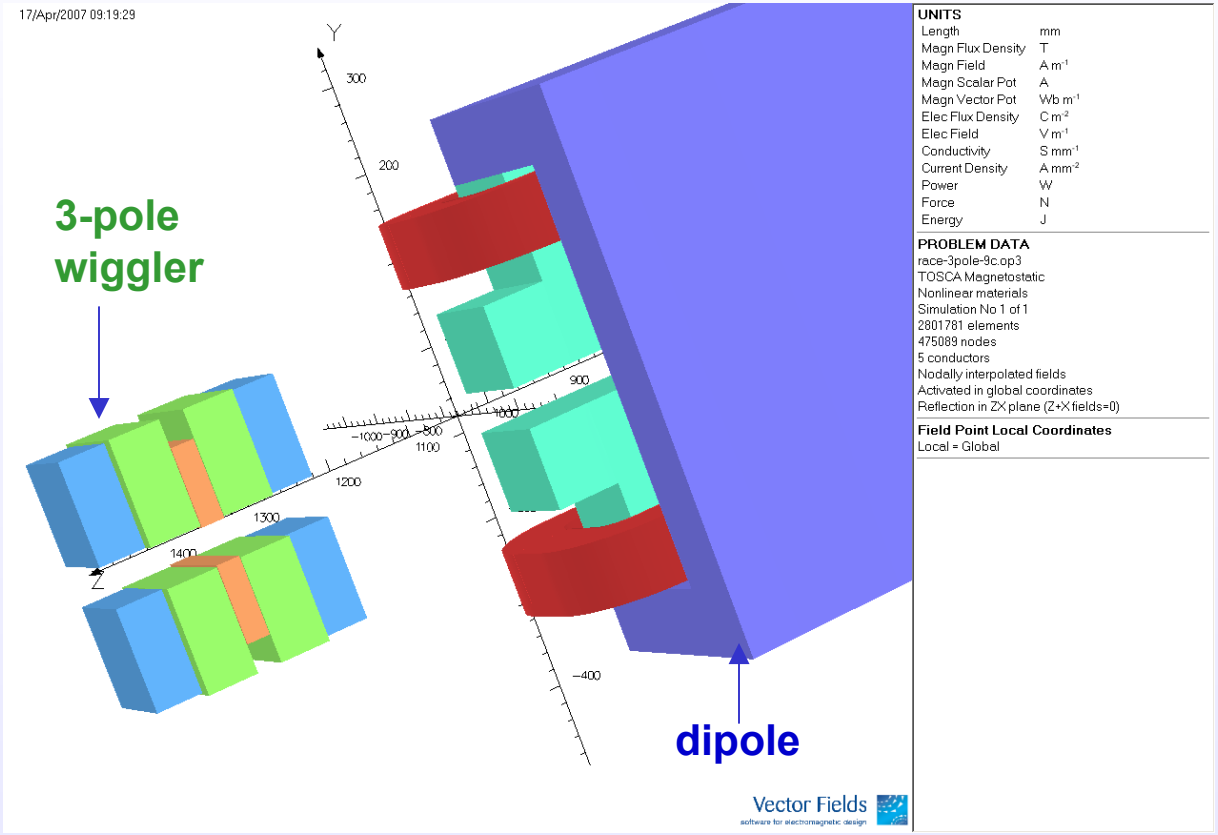


Field when both are included in the model



- There is virtually no interference (< few parts in 1,000) between the fields of three pole wiggler and dipole.
- **Design with racetrack coils and ~18 cm of free space for whatever purpose. This is at the expense of a little extra iron (coils moved up).**

Newer design with 1" radius coils and yoke back-leg open (~ 18 cm coil to iron gap)



This design allows racetrack coils and ~18 cm of free space,

(plus some extra space on the back-leg side of yoke).

MODEL WITH YOKE ON BACK-LEG SIDE REMOVED